Red Hat Enterprise Linux 5
5.5 Release Notes

Release Notes

Red Hat Inc.

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Abstract

Red Hat Enterprise Linux minor releases are an aggregation of individual enhancement, security and bug fix errata. The Red Hat Enterprise Linux 5.5 Release Notes documents the major changes made to the Red Hat Enterprise Linux 5 operating system and its accompanying applications for this minor release. Detailed notes on all changes in this minor release are available in the Technical Notes. Highlights of the Red Hat Enterprise Linux 5.5 release include hardware enablement for the Intel Boxboro-EX platform, AMD Magny-Cours processor and IBM Power 7 processor. Virtualization is improved, with support for multiple 10 GigE SR-IOV cards, and automatic usage of hugepages for virtual guest memory when enabled on the system. Interoperability improvements include updates to OpenOffice for Microsoft Office 2007 filters, Samba for Windows 7 compatibility and boot support for virtual machines using Microsoft based PXE services.

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1. Installation

Red Hat Enterprise Linux 5.5 introduces many bugfixes and enhancements to the system installer (**anaconda**).

The interactive installer has been enhanced, adding the abilty to specify additional Network File System (NFS) mount options when installing from an NFS source (BZ#493052). Additionally, install sources (e.g. kickstart files) located on password protected File Transport Protocol (FTP) servers can now be retrieved during installation (BZ#505424).

Kickstart

Kickstart provides a way for users to automate a Red Hat Enterprise Linux installation. Using kickstart, a system administrator can create a single file containing the answers to all the questions that would normally be asked during a typical installation.

Kickstart debugging and error reporting has been improved. The installer now retains kickstart scriptlets during debugging, logs *standard output* (**stdout**) and *standard error* (**stderr**) streams, and logs error messages to **anaconda.log** (BZ#510636).

Package groups can now be excluded in a kickstart installation in the same manner that individual packages are excluded (BZ#558516). Additionally, the **bootloader** command now supports the **--hvargs** parameter, allowing Xen hypervisor arguments to be specified during a kickstart installation (BZ#501438).

Previously, the kickstart installation method offered two options to select all packages **@Everything** and ***** (wildcard). As of Red Hat Enterprise Linux 5.5, both of these options have been *deprecated*. Attempting to use a select all packages option will fail, unless the kickstart file also includes package negation for conflicting packages. Therefore, to install all packages but conflicting packages, the kickstart file must contain:

```
%packages
@Everything
-@Conflicts
```

Red Hat Enterprise Linux 5.5 includes the new package sets **samba3x**, **freeradius2**, **postgres84**. These package sets are only available via **kickstart** during system installation or through **yum** for existing systems.

Hardware Support

The following device drivers are now supported during installation:

- the **pmcraid** driver for PMC Sierra MaxRAID Controller Adapters (BZ#532777)
- the **ibmvfs** driver for Power6 Virtual FC devices (BZ#512237).
- the **bfa** driver for Brocade Fibre Channel to PCIe Host Bus Adapters (BZ#475707)
- the **be2iscsi** driver for ServerEngines BladeEngine 2 Open iSCSI devices (BZ#529442).

Note

For detailed information on installation, the Installation Guide documents how to install Red Hat Enterprise Linux 5.

2. Virtualization

Red Hat Enterprise Linux 5.5 delivers many updates to virtualization. Detailed notes on all the changes to virtualization components are available in the Technical Notes.

Note

Management of KVM based virtual guests using Cluster Suite is now fully supported.

SPICE

Red Hat Enterprise Linux 5.5 includes components providing functionality for the **Simple Protocol for Independent Computing Environments (SPICE)** remote display protocol. These components, are for use in conjunction with Red Hat Enterprise Virtualization products and are not guaranteed to have a stable ABI. The components will be updated to synchronize with functional requirements of Red Hat Enterprise Virtualization products. Migration to future releases may require manual operations on a per-system basis.

PCI passthrough improvements

PCI passthrough allows PCI devices to appear and behave as if they were physically attached to the guest operating system. KVM and Xen hypervisors both support attaching PCI devices on the host system to virtualized guests.

The AMD input/output memory management unit (IOMMU) kernel driver, which assists in PCI passthrough, has been updated. This update fixes an issue where system management requests were handled incorrectly. (BZ#531469)

Support for PCI passthrough using Intel VT-d extensions on the KVM hypervisor has been improved. Devices (either physical or virtual) can now be shutdown and unassigned from a guest during runtime, allowing the device to be reassigned to another guest. This reassignment can also be carried out live (BZ#516811). Additionally, 1:1 mapping performance has been improved (BZ#518103).

Note

For detailed information on virtualization, the Virtualization Guide is the definitive guide for virtualization on Red Hat Enterprise Linux.

HugePages Support

New rules are available in **libvirt** to enable **hugetlbfs** (HugePages). When a system is configured with Hugepages, libvirt automatically allocates memory from hugetlbfs to back the virtual guest memory. When

combined with extended page tables and nested page tables in hardware, significant performance improvements can be achieved by the guest. (BZ#518099)

3. Kernel

3.1. Kernel Platform Enablement

This release introduces support for Intel's new platforms, code-named **Boxboro-EX** and **Boxboro-MC**, AMD's new processor family, code-named **Magny-Cours** and IBM's **Power7** processor.

3.2. Kernel Generic Features

The recommended minimal memory requirement on x86 and x86_64 for Red Hat Enterprise Linux 5.5 is now 1GB per logical CPU.

Note

A logical CPU is defined as any entity that can be scheduled (i.e. every core or thread in a multi-core or multi-thread processor is defined as a logical CPU).

Detecting kernel tasks stuck in the uninterruptible sleep state

In some circumstances, tasks in the kernel may permanently enter the uninterruptible sleep state (D-State), making the system impossible to shut down. With this update, the *Detect Hung Task* kernel thread has been added, providing the ability to detect tasks permanently stuck in the D-State.

This new feature is controlled by the **CONFIG_DETECT_HUNG_TASK** kernel flag. When set to "y" tasks stuck in the D-State are detected; when set to **n** it is off. The default value for the **CONFIG_DETECT_HUNG_TASK** flag is **y**.

Additionally, the **CONFIG_BOOTPARAM_HUNG_TASK_PANIC** flag has been added. When set to **y**, a kernel panic is triggered when a task stuck in the D-State is detected. The default value for the **CONFIG_BOOTPARAM_HUNG_TASK_PANIC** flag is **n**.

BZ#506059

Signed s390 Kernel Modules

Starting at Red Hat Enterprise Linux 5.5, all s390 kernel modules are now signed. BZ#483665

BZ#456181, BZ#448130, BZ#427709

4. Device Drivers

the **hpilo** driver for HP iLO/iLO2 management processors has been updated.

The Advanced Linux Sound Architecture (ALSA) has been updated — providing enhanced support for High Definition Audio (HDA). (BZ#525390).

the **i2c** device driver for the iic-bus interface has been updated with support for the SB900 SMBus controller. (BZ#516623)

the **mlx4** driver for Mellanox ConnectX HCA InfiniBand devices has been updated to version 1.4.1

(BZ#514147 BZ#500346)

4.1. Network Device Drivers

Wireless Rebase

Red Hat Enterprise Linux 5.5 contains a major updates to wireless drivers and subsystems in the kernel.

The **iwlwifi** drivers for Intel wireless network adapters have been updated. Devices in this hardware line support *802.11a*, *802.11b*, *802.11g*, and *802.11n* wireless protocols. This update provides new support for **iwl6000** and **iwl1000** devices, and enhanced support for **iwl5000**, **iwl4965** and **iwl3945** devices.

The **rt2x00** drivers for wireless devices has been updated. This update refreshes the drivers for the Ralink **rt2400pci**, **rt2500pci**, **rt2500usb**, **rt61pci**and **rt73usb** chipsets, and the drivers for the **rtl8180** and **rtl8187** Realtek chipsets.

The **ath9k** driver for Atheros 802.11n wireless LAN adapters has been enabled.

To support the features of these drivers, the **mac80211** and **cfg80211** kernel subsystems have been updated.

Solarflare driver

In Red Hat Enterprise Linux 5.5, the Solarflare driver (**sfc**) has been added (BZ#448856)

Neterion's X3100 Series 10GbE PCIe driver

The **vxge** driver for Neterion's X3100 Series 10GbE PCIe devices has been updated (BZ#453683).

ServerEngines BladeEngine2 10Gbps driver

the **be2net** driver for ServerEngines BladeEngine2 10Gbps network devices has been updated (BZ#549460)

Cisco 10G Ethernet Driver

the **enic** driver for Cisco 10G Ethernet devices has been updated to version 1.1.0.100. (BZ#519086 BZ#550148)

QLogic 10 Gigabit PCI-E Ethernet Driver

the **qlge** driver for QLogic 10 Gigabit PCI-E ethernet devices has been updated to version 1.00.00.23. (BZ#519453)

Broadcom Tigon3 ethernet devices

the **tg3** driver for Broadcom Tigon3 ethernet devices has been updated. (BZ#515312)

Intel Gigabit Ethernet Network Devices

the **igb** driver for Intel Gigabit Ethernet Network devices has been updated. (BZ#513710)

Intel 10 Gigabit PCI Express Network Devices

the **ixgbe** driver for Intel 10 Gigabit PCI Express Network devices has been updated. (BZ#513707, BZ#514306, BZ#516699)

Intel PRO/1000 Network Devices

The **e1000** driver for Intel PRO/1000 network devices has been updated (BZ#515524)

NetXen Multi port (1/10) Gigabit Network Devices

The **netxen** driver for NetXen Multi port (1/10) Gigabit Network devices has been updated. (BZ#542746)

Broadcom Everest network devices

The **bnx2x** driver for Broadcom Everest network devices has been updated to version 1.52.1-5.(BZ#515716, BZ#522600)

Broadcom NetXtreme II network devices

The **bnx2** driver for Broadcom NetXtreme II network devices has been updated to version 2.0.2(BZ#517377)

Broadcom NetXtreme II iSCSI

The **bnx2i** driver for Broadcom NetXtreme II iSCSI has been updated. (BZ#516233)

RealTek 8169 ethernet driver

the **r8169** driver for RealTek 8169 ethernet devices has been updated. (BZ#514589)

4.2. Storage Device Drivers

QLogic Fibre Channel Host Bus Adapter Driver

the **qla2xxx** driver for QLogic Fibre Channel HBAs has been updated to version 8.03.01.04.05.05-k (BZ#519447 BZ#542834 BZ#543057)

HighPoint RocketRAID 3xxx/4xxx

The **hptiop** driver for HighPoint RocketRAID 3xxx/4xxx controllers has been updated, adding support for RR44xx adapters. (BZ#519076)

Emulex Fibre Channel Host Bus Adapter Driver

The **lpfc** driver for Emulex Fibre Channel HBAs has been updated to version 8.2.0.63.3p. (BZ#515272) BZ#549763

LSI SAS-2 family of adapters

The **mpt2sas** driver that supports the SAS-2 family of adapters from LSI has been updated to version 02.101.00.00. This update fixes many issues, most notably:

- Sanity checks have been added when volumes are added and removed, ignoring events for foreign volumes.

- driver is now legacy I/O port free
- An issue that may have resulted in a kernel oops at hibernation or resume has been fixed.

(BZ#516702)

LSI Fusion MPT

The **mptque** base driver for devices using LSI Fusion MPT firmware has been updated to version 3.4.13rh. This update fixes many issues, most notably:

- The serial attached SCSI (SAS) topology scan has been restructured, adding expander, link status and host bus adapter (HBA) events.
- Intermittent issues caused by SAS cable removal and reinsertion have been fixed.
- An issue where SATA devices received different SAS addresses has been fixed.
- The device firmware now reports the queue full event to the driver and the driver handles the queue full event using the SCSI mid-layer.

(BZ#516710)

LSI MegaRAID SAS controllers

The **megaraid_sas** driver for LSI MegaRAID SAS controllers has been updated to version 4.17-RH1. This update fixes many issues, most notably:

- An issue during firmware boot and initialization has been fixed.
- An issue that resulted in devices hanging during hibernation has been fixed.
- The driver now auto updates the device when added or deleted.
- MegaRAID SAS driver is now legacy I/O port free

BZ#518243

5. Filesystem/Storage Management

Improved CFQ I/O scheduler performance

Some applications (e.g. **dump** and **nfsd**) try to improve disk I/O performance by distributing I/O requests to multiple processes or threads. However, when using the Completely Fair Queuing (CFQ) I/O scheduler, this application design negatively affected I/O performance. In Red Hat Enterprise Linux 5.5, the kernel can now detect and merge cooperating queues. Additionally, the kernel can also detect if the queues stop cooperating, and split them apart again.

New GFS2 mount option

This update introduces **GFS2** support for the **errors=** mount command line option, which may assist in troubleshooting. The default option, **errors=withdraw** results in the filesystem attempting to withdraw from the cluster if an I/O error or metadata error is encountered. The alternative, **errors=panic** results in a panic in the same situation. (BZ#518106)

CIFS Update

The Common Internet File System (CIFS) has been updated in the kernel. (BZ#500838)

6. Tools

6.1. GNU Project debugger (GDB)

The **GNU Project debugger** (normally referred to as **GDB**) debugs programs written in C, C++, and other languages by executing them in a controlled fashion, and then printing out their data.

In Red Hat Enterprise Linux 5.5, GDB has been updated to version 7.0.1. For a detailed listing of changes refer to the GDB section of the Technical Notes.

Enhanced C++ support

Support for the C++ programming language in GDB has been improved. Notable improvements include:

- Many improvements to expression parsing.
- Better handling of type names.
- The need for extraneous quoting has nearly been eliminated
- "next" and other stepping commands work properly even when the inferior throws an exception.
- GDB has a new "catch syscall" command. This can be used to stop the inferior whenever it makes a system call.

Wide and multi-byte character support

GDB now has support for wide and multi-byte characters on the target.

Independent thread debugging

Thread execution now permits debugging threads individually and independently of each other; enabled by new settings "set target-async" and "set non-stop".

6.2. SystemTap

SystemTap is a tracing and probing tool that allows users to study and monitor the activities of the operating system (particularly, the kernel) in fine detail. It provides information similar to the output of tools like **netstat**, **ps**, **top**, and **iostat**; however, SystemTap is designed to provide more filtering and analysis options for collected information.

New Kernel Tracepoints

Tracepoints are placed in important sections of the kernel, allowing system administrators to analyze the performance of, and debug portions of code. In Red Hat Enterprise Linux 5.5, a wide range of tracepoints have been added to the kernel (BZ#475710), including tracepoints for networking (BZ#475457), coredump (BZ#517115) and signal (BZ#517121).

Note

A list of tracepoints available in the kernel can be obtained with:

```
stap -L 'kernel.trace("*")'|sort
```

Unprivileged mode

Previously, only users with root privileges were able to use SystemTap. This update introduces SystemTap's unprivileged mode, allowing non-root users to still use SystemTap. Detailed information on

unprivileged **man stap-client** manpage.

Important

Unprivileged mode is considered a Technology Preview in the Red Hat Enterprise Linux 5.5. The stap-server facility on which it relies is undergoing work for security improvements and should be deployed with care on a trustworthy network.

C++ Probing

The C++ program probing improvements also allows better probing of user-space programs.

6.3. Valgrind

Valgrind is used to monitor memory read, write, and allocation operations. The valgrind tool is frequently used by developers to diagnose and debug memory management problems.

Valgrind has been updated to version 3.5.0, providing enhanced support for a wide range of system architectures. This update introduces many improvements to performance, scalability and usability of the Valgrind. Notably, the usability and scalability of the Helgrind tool — which is used to detect race contiditions — has been improved. The leak checking capabilities of the **Memcheck** tool are also improved. Additionally, support for DWARF debugging information has been enhanced.

7. Desktop Updates

OpenOffice.org

OpenOffice.org is an Open Source, multi-platform office productivity suite. It includes key desktop applications, such as a word processor, spreadsheet, and presentation manager. OpenOffice.org has been updated, providing many bugfixes and enhancements, including support for Microsoft Office 2007 OOXML formats.

Metacity

Metacity, the default window manager for the GNOME desktop has been updated, providing enhancements, additional GConf keys to control the the behavior of metacity and bug fixes.

8. New Packages

FreeRADIUS

FreeRADIUS is a high-performance, highly configurable, free Remote Authentication Dial In User Service (RADIUS) server. It is designed to allow centralized authentication and authorization for a network.

FreeRADIUS 2.0 is available as a new package (**freeradius2**) in Red Hat Enterprise Linux 5.5. FreeRADIUS 1 is still available in Red Hat Enterprise Linux 5 in the original **freeradius** package. Version 2.0 of FreeRADIUS introduces many new features including the programming language **unlang**, virtual server support., additional directories for improved RFC coverage and full IPv6 support for both attributes & network packets.

Important

The **freeradius** and **freeradius2** packages share common files, and cannot be installed together on the same system.

PostgreSQL 8.4

PostgreSQL 8.4 (**postgresql84**) is now included as a fully supported option in Red Hat Enterprise Linux 5. New features in PostgreSQL 8.4 include: parallel database restore, per-column permissions and new monitoring tools.

Important

A data dump and restore using pg_dump is required for migration from the existing PostgreSQL 8.1 (supplied by the **postgres** package). Due to this requirement, **postgres** and **postgresql84** contain package level conflicts and only a single version can be installed on a system.

Samba

Samba is a suite of programs used by machines to share files, printers, and other information.

The Samba3x package set was originally introduced in the x86_64 Supplementary for the 5.4 release. In Red Hat Enterprise Linux 5.5, Samba3x has been updated and is now *supported* on all architectures. Samba3x includes support for Microsoft® Windows™ 7 interoperability.

Important

Clustered Samba support is still a Technology Preview and only available on the x86_64 architecture.

Samba3x is based on the upstream Samba 3.3 release and includes the following changes in the configuration file options:

Parameter	Description	Default
cups connection timeout	New	30
idmap config DOM:range	Removed	
idmap domains	Removed	
init logon delayed hosts	New	""
init logon delay	New	100
ldap ssl	Changed Default	start tls
share modes	Deprecated	
winbind reconnect delay	New	30

The samba source component has been refactored to generate a **libsmbclient** package. The libsmbclient is included into both **samba** and **samba3x** packages to provide client interfaces to other components in the environment.

Important

All previous samba3x Technology Preview packages must be removed before installing the supported version of Samba3x.

gPXE

Red Hat Enterprise Linux 5.5 introduces the new gPXE package, an open source Preboot eXecution Environment (PXE) implementation. gPXE provides the ability to boot installation images via a network connection.

A. Revision History

Revision 0-40.402	**Fri Oct 25 2013**	**Rüdiger Landmann**
Rebuild with Publican 4.0.0		
Revision 0-40	**2012-07-18**	**Anthony Towns**
Rebuild for Publican 3.0		
Revision 0-0	**Tue Nov 24 2009**	**Ryan Lerch**
Initial creation of book by publican		